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Inventory Management System

Program Notes for BTEC IT Unit 4

Learning Aim A – Code Analysis

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Overview - What Is The program?

The program is meant to simulate a real-world inventory management system. The idea is that inventory product names, stock levels and alert status are held in a file called InventoryData.txt

Each row of this file contains a separate inventory product and their associated data.

The list of products is loaded into the program from which simple data operations are performed.

At the end of each modification operation, the user is given a chance to save the data back to the file.

The program makes extensive use of:

- User Input validation
- Arrays and Structures
- Try Catch Finally blocks
- Do while loops
- Switch Case
- For loops
- File Input and Output.

The program code has been especially designed to use only the code techniques covered in the syllabus. It is not meant to represent a definitive inventory management system, however it will provide enough of a detailed code base for students to analyse for Learning Aim A.

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Getting Started – The Text File

Key information is held in the file InventoryData.txt.

The file contains the following information:

ID, NAME, CAT, STOCK, STATUS
1 , Rice, Grocery, 10, ALERT!
2 , Onions, Vegetables, 100, MAX
3 , Lemonade, Drinks, 100, MAX
4 , Carrots, Vegetables, 100, MAX
5 , Bread, Grocery, 70, GOOD
6 , Cola, Drinks, 100, MAX
7 , Apples, Fruit, 100, MAX
8 , Bread, Grocery, 100, MAX

Figure 1 – the text file data for the program.

The first row is a header row and identifies the following columns:

- ID – a unique ID for each record
- NAME – the name of the item
- CAT – the category that the item belongs to: Grocery, Vegetables, Drinks, Fruit
- STOCK – the number of items held in stock. The amount in stock gives the item a status.
- STATUS – if under 10 items, this is an ALERT, if between 10 and 50 is WARNING, if over 50 is GOOD and if 100 is MAX.

The items are separated by a ‘,’ to allow the line to be split into a string array.

Note the last item on the list has no ‘,’ after it and this logic must be dealt with in code.

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The Main Menu

On running the program, the Main Menu is displayed:

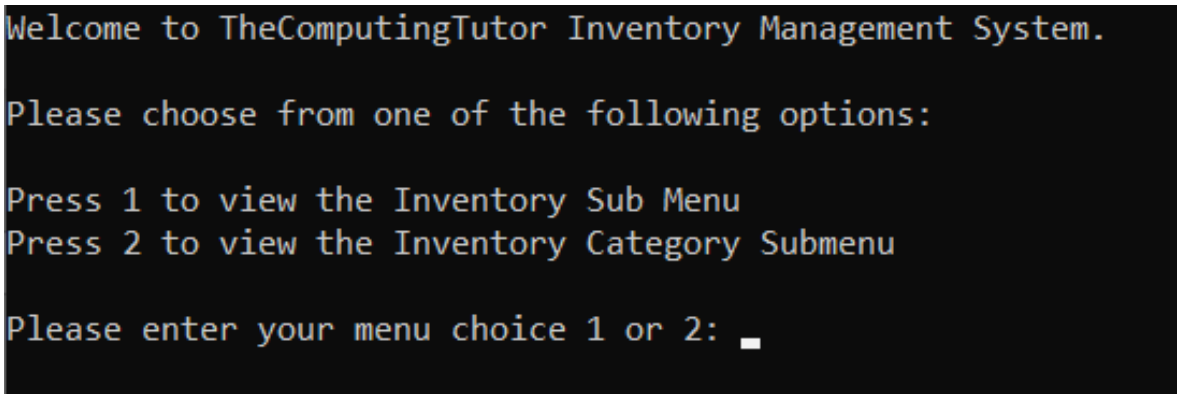
Welcome to TheComputingTutor Inventory Management System.
Please choose from one of the following options:
Press 1 to view the Inventory Sub Menu
Press 2 to view the Inventory Category Submenu
Please enter your menu choice 1 or 2:

Figure 2 the main menu of the program.

The program then displays the standard error handling.

Any user input must be of the correct datatype (string, int) and must be a valid number.

This is carried out by a combination of SELECT CASE statements to check for validity, a DO WHILE loop to prompt the user to have another go, and a TRY CATCH statement to check for the correct datatypes being entered.

Key Functions	
Function Name	Purpose
`RunProgram()`	The main code to run the program
`LoadInventoryData()`	Loads the inventory data file into a holding array of strings
`MainMenu()`	Displays the main menu to the user.
`BuildInventory()`	Builds an array of inventory structures from the string array. This array is visible to the entire program.
`DisplayInventorySubMenu()`	Displays the inventory sub menu
`DisplayCategorySubMenu()`	Displays the category sub menu
`CheckNumericalUserInput()`	Checks any user input. If it is not a number the code returns -1

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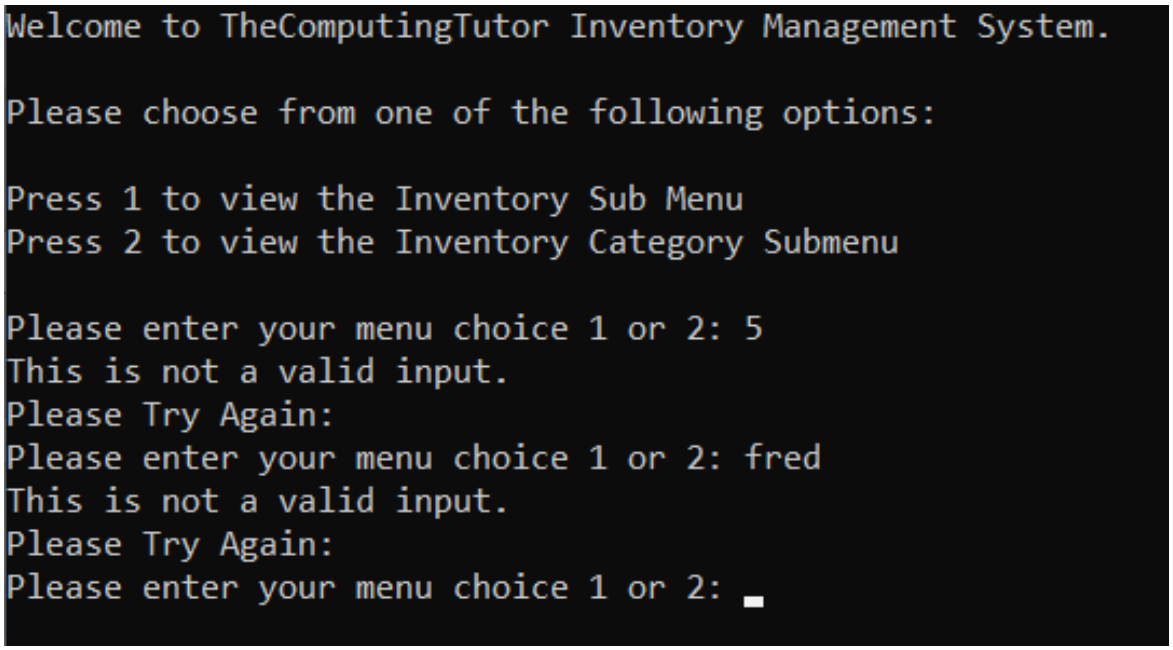
Welcome to TheComputingTutor Inventory Management System.
Please choose from one of the following options:
Press 1 to view the Inventory Sub Menu
Press 2 to view the Inventory Category Submenu
Please enter your menu choice 1 or 2: 5
This is not a valid input.
Please Try Again:
Please enter your menu choice 1 or 2: fred
This is not a valid input.
Please Try Again:
Please enter your menu choice 1 or 2:

Figure 3 – user input validation for the main menu.

If a user enters a string, when the program tries to convert this to a number a FormatException is caught.

When this happens, the catch block sets a variable to -1 and returns this number. If the calling code detects this number, then the user has entered the wrong datatype and the program will prompt the user for another go.

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The Inventory Sub Menu

```
Displaying Full Inventory....

-------------------------------------------------------------------------------
|       ID      |       NAME    |       CAT     |       STOCK   |       STATUS  |
-------------------------------------------------------------------------------

|       1       |       Rice    |       Grocery |       10      |       ALERT!  |
-------------------------------------------------------------------------------
|       2       |       Onions  |       Veg     |       100     |       MAX     |
-------------------------------------------------------------------------------
|       3       |       Juice   |       Drink   |       100     |       MAX     |
-------------------------------------------------------------------------------
|       4       |       Carrots |       Veg     |       100     |       MAX     |
-------------------------------------------------------------------------------
|       5       |       Bread   |       Grocery |       70      |       GOOD    |
-------------------------------------------------------------------------------
|       6       |       Cola    |       Drink   |       100     |       MAX     |
-------------------------------------------------------------------------------
|       7       |       Apples  |       Fruit   |       100     |       MAX     |
-------------------------------------------------------------------------------
|       8       |       Bread   |       Grocery |       100     |       OK      |
-------------------------------------------------------------------------------
What would you like to do now?
Press 1 to edit stock levels.
Press 2 to add a new stock item.
Press 3 to save the inventory.
Press 4 to go back to the Main Menu.

Please enter your menu choice 1, 2, 3 or 4:
```

Figure 4 The Inventory sub menu.

On selecting the inventory sub menu, the user is presented with the inventory in grid form.

The inventory is loaded as a string array from a file.

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